

Abstract Submitted
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Human umbilical vein endothelial cell interaction with phospholipid polymer nanofibers coated by micro-patterned diamond-like carbon (DLC) SOKI YOSHIDA, Department of Mechanical Engineering, Keio University, TERUMITSU HASEBE, Department of Radiology, Tokai University Hachioji Hospital, TETSUYA SUZUKI, ATSUSHI HOTTA, Department of Mechanical Engineering, Keio University — Blood-contacting medical devices should possess the surface properties with the following two important characteristics: The first is the anti-thrombogenicity of the material surface and the second is the re-endothelialization over the device surface after long-term implantation, because endothelial cells have excellent anticoagulant properties in blood vessels. To develop highly hemocompatible materials that could promote surface endothelialization, we investigated biocompatible polymers coated with thin diamond-like carbon (DLC) film. In this research, we examined the viability of human umbilical vein endothelial cells (HUVECs) for hydrophilic 2-methacryloyloxyethyl phosphorylcholine (MPC) fibers with DLC coatings, both of which were known to be anti-thrombogenic. DLC was synthesized on MPC by varying the ratio of covered area by patterned DLC. HUVECs were seeded on DLC-coated MPC for 6 days. The results indicated that the MPC surface with DLC did not disturb HUVEC proliferation in 6 days of culture. Additionally, we are currently making strong efforts to fabricate MPC fibers with bFGF which is an important growth factor involved in cell proliferation. MPC containing bFGF with DLC coatings could be extensively utilized for blood-contacting medical devices.

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